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CORRESPONDENCE

Clinical application of platelet-rich fibrin in perio-endo combined intrabony defect

Platelet-rich fibrin (PRF) is a second-generation platelet concentrate that allows one to obtain fibrin membranes enriched with platelets and growth factors from an anticoagulant-free blood harvest.[1] PRF can stimulate the proliferation of osteoblasts, gingival fibroblasts, and periodontal ligament cells, but suppress oral epithelial cell growth. The cell type-specific actions of PRF may be beneficial for tissue regeneration.[2] The present study

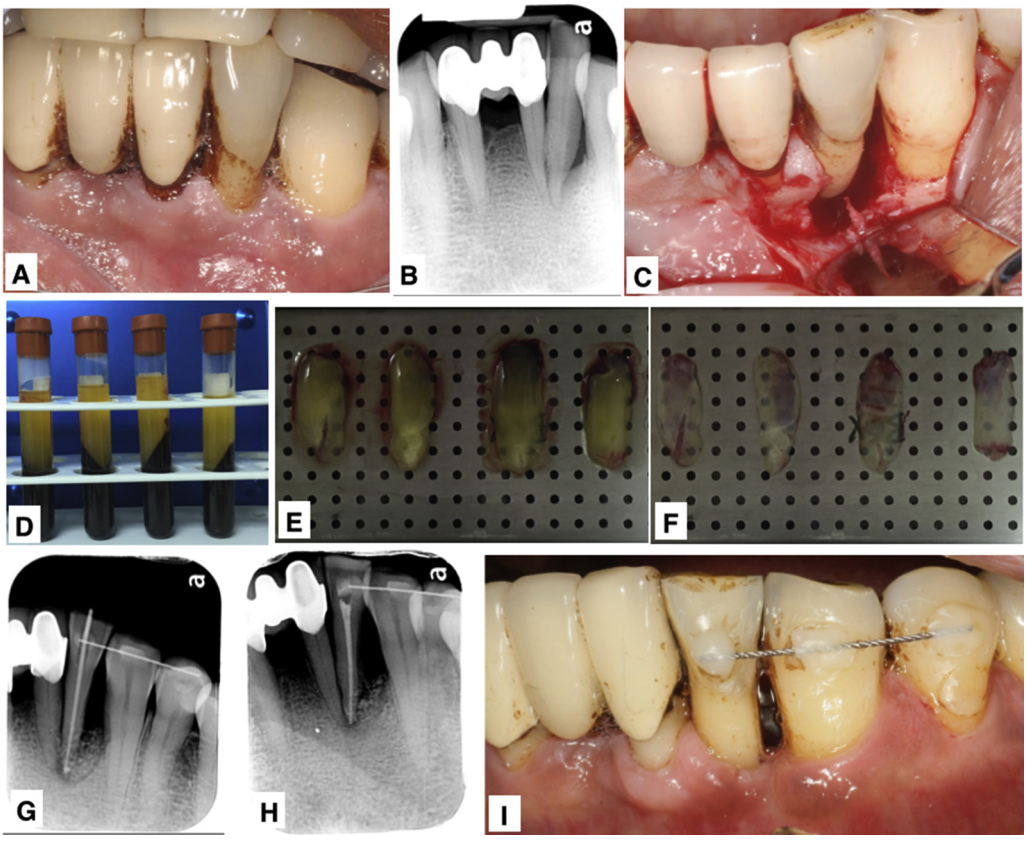

Figure 1 Clinical photographs of the left anterior mandibular sextant. (A) Initial photograph of #32. (B) Initial periapical radiograph of #32. (C) After flap reflection, buccal dehiscence and one-wall combined with two-wall intrabony defect was exhibited. (D) Platelet-rich fibrin (PRF) was prepared and formed in the middle part of the tube. The upper part contained acellular plasma and the bottom part contained red corpuscles. (E) PRF clots were transformed into PRF box. (F) PRF membranes were obtained after condensation on a sterile metal plate. (G) Periapical radiograph after 2 months of follow-up. (H) The periapical radiograph after 6 months of follow-up. (I) Clinical photograph after 6 months of follow-up.

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reported a patient with perio-endo combined intrabony defect treated with PRF.

A 56-year-old man was referred to the Department of Periodontics, Chung Shan Medical University Hospital, Taichung, Taiwan, with a complaint of periodontal disease, especially the left mandibular lateral incisor (#32) (Fig. 1A). Accumulation of heavy plaque and calculus was noted, and pus discharge from the pocket of #32 persisted. He had a noncontributory medical history but had a smoking habit for 30 years. The periodontal examination revealed general attachment loss and intrabony defect on #32, which showed negative vitality (Fig. 1B). The treatment plan included active periodontal therapy followed by supportive therapy, smoking cessation, and endodontic treatment of #32. The results of reevaluation showed overall probing depth reduction; however, pus discharge from #32 continued. The papilla preservation technique was done to reveal the combination of one-wall and two-wall defects (Fig. 1C). This was followed by thorough root debridement and removal of granulation tissue, then a detoxified procedure was performed with tetracycline. Blood samples were taken according to the PRF protocol,[2] with a PC-02 table centrifuge and collection kits provided by Process (Nice, France). Quickly, blood samples were taken from this patient without using an anticoagulant and placed into 10-mL glass-coated plastic tubes (Vacutainer; Becton, Dickinson and Company, Franklin Lakes, NJ, USA), which were immediately centrifuged at 3000 rpm for 12 minutes. After centrifugation, each PRF clot was separated from the red blood cell base, condensed, and then modeled on a sterile metal plate to obtain the PRF membranes (Figs. 1D–F). The minced PRF graft materials mixed with β-tricalcium phosphate (Osteocera, Wiltron Co., Ltd, Hsinchu, Taiwan) were filled in the defect. The PRF membrane was trimmed and adapted over the grafted defect. A primary closure was attempted and achieved by internal vertical mattress and single suture with 4–0 Nylon. Wire splinting was done for stabilization. Clinical healing was uneventful, with neither infectious episodes nor untoward clinical symptoms. The periapical radiography exhibited that the defect was filled with bone-like dense tissue gradually (Figs. 1G and 1H). Six months after the treatment, the thickness of the gingiva increased on the buccal side approximately up to 1.5 mm (Fig. 1I).

PRF is derived from an autogenous preparation of concentrated platelets without any manipulation. The clinical applications of PRF with or without graft have been described in periodontal regeneration surgery,[3] radicular cyst enucleation,[4] and gingival recession augmentation[5] for increasing hard and soft tissue regeneration. To the best of our knowledge, this is the first report about the use of PRF and β-tricalcium phosphate for treatment of perio-endo combined intrabony defect. The results demonstrated the achievement of probing depth reduction, clinical attachment gain, increase of gingival thickness, and increase of periapical bone density over a 6-month period. However, more expanded clinical studies are needed to confirm these findings.

Conflicts of interest

The authors have no conflicts of interest relevant to this article.

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